



06/85748

APPROPRIATE NUMBER	FILED DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
06/85748	03/20/97	HASHIZUME	045026

MM41/0608  
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WASHINGTON DC 20037-3202

EXAMINER
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DICKENS, C

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 06/08/99

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

### OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 3/29/99

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire -3- month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

#### Disposition of Claims

- ☒ Claim(s) 1-12 is/are pending in the application.  
Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
☐ Claim(s) \_\_\_\_\_ is/are allowed.  
☒ Claim(s) 1-12 is/are rejected.  
☐ Claim(s) \_\_\_\_\_ is/are objected to.  
☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

#### Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.  
☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.  
☒ The proposed drawing correction, filed on 3/29/99 is ☒ approved ☐ disapproved.  
☐ The specification is objected to by the Examiner.  
☐ The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).  
☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☒ received.  
☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_  
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- ☐ Notice of Reference Cited, PTO-892  
☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7/10  
☐ Interview Summary, PTO-413  
☐ Notice of Draftsperson's Patent Drawing Review, PTO-948  
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

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**DETAILED ACTION**

***Drawings***

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on March 29, 1999 have been approved by the Examiner.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamuro et al. in view of Okabayashi et al.

Yamamuro et al. discloses an ink-jet recording head (Fig. 25B) comprising: an elastic sheet 16 facing pressure generating chambers 18; nozzle orifices 14; piezoelectric vibrators, formed on the elastic sheet 16, having lower electrode 72; piezoelectric layer 70 formed on the lower electrode 72; upper electrode 82 formed on the piezoelectric layer 70; an silicon oxide insulator layer 78 covering the upper electrode 82; and conductor pattern 76 connecting with the upper electrode 82; wherein the conductor

pattern is formed on a lateral side of the upper electrodes between the pressure generating chambers and connected to said upper electrode at more than one site. Regarding claim 5, it is noted that Yamamuro et al. discloses the use of silicon oxide, silicon nitride or the like as the insulator layer. The specification of the instant application does not give any criticality of the use of polyimide; thus, the teaches of Yamamuro et al. generally covers the use of such material.

However, Yamamuro et al. does not disclose an insulator layer having a window and piezoelectric layer and an upper electrode formed entirely inside of areas facing the pressure chambers. Okabayashi et al. discloses an insulator layer 11 having an insulating window 9c and piezoelectric layer 8 and an upper electrode 9a formed entirely inside of areas facing the pressure chambers 5 (Fig. 1) for the purpose of contracting a piezoelectric material to eject ink from a jet nozzle. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an insulator layer having a window and piezoelectric layer and an upper electrode formed entirely inside of areas facing the pressure chambers in Yamamuro et al. as taught by Okabayashi et al. for the purpose of contracting a piezoelectric material to eject ink from a jet nozzle.

***Response to Arguments***

4. Applicants' arguments filed March 29, 1999 have been fully considered but they are not persuasive.

Applicants argue Yamamuro et al. (Yamamuro) does not teach or suggest a lower electrode formed on an elastic sheet. The Examiner disagrees with this argument. Yamamuro clearly illustrates a lower electrode 72 formed on an elastic sheet 16. It is noted that the claims do not call for a lower electrode formed directly on an elastic sheet.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., an upper insulator layer formed on the upper electrodes ) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants go on to argue Yamamuro does not teach or suggest a conductor pattern which connects with the upper electrodes through windows formed in the insulator layer. This argument is true. However, Yamamuro is not used to suggest windows formed in the insulator layer but Okabayashi et al. (Okabayashi) is used to suggest windows formed in the insulator layer. Also, one cannot

show non-obviousness by attacking references individually where, as here the rejections are based on combination of references.

In re Keller, 208 USPQ 871 (CCPA 1981).

In response to applicants' argument that it is impossible to connect the conductive layer 76 to the electrode 82 through a window in the protective layer 78, the test for obviousness is not whether the features, i.e., a insulator having a window, of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Finally, the applicants argue, neither Okabayashi nor Yamamuro teaches or suggests a piezoelectric layer and upper electrodes which are formed entirely inside areas facing the pressure generating chambers. The Examiner disagrees with this argument. Okabayashi clearly illustrates this claimed feature in Fig. 1 of the reference.

Accordingly, Yamamuro in combination with Okabayashi clearly teaches and suggests the applicants' claimed invention and therefore all of the above arguments are deemed not to be persuasive.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


**Contact Information**


6. Any inquiry concerning this or earlier communications from the examiner should be directed to Examiner Dickens whose telephone number is (703) 305-7047. Any inquiry of a general nature or relating to the status of this application should be

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directed to the receptionist whose telephone number is (703) 308-1782. The fax numbers are (703) 305-3431 and (703) 305-3432.

  
cd/dickens  
June 2, 1999

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800